

CLAIMS

What is claimed is:

1. A device for moistening an envelope flap of an envelope, comprising:
 - means defining an envelope feed path;
 - a plate disposed adjacent said envelope feed path, said plate being positioned such that said plate passes between said envelope flap and a body of said envelope as said envelope is transported along said envelope feed path, said envelope flap facing a first side of the plate;
 - a reservoir containing an envelope flap moistening fluid;
 - a plurality of orifices formed in said first side of said plate for discharging moistening fluid received from said reservoir;
 - valve means connected between said reservoir and said orifices for selectively supplying each of the orifices with moistening fluid from said reservoir; and
 - flap sensing means disposed adjacent said envelope feed path for sensing an edge portion of said envelope flap, and operatively connected to said valve means for supplying signals to said valve means for selectively actuating said valve means to selectively supply moistening fluid to said orifices in response to the sensing of the edge portion of said envelope flap.
2. The device according to claim 1, wherein said orifices are arranged in a first substantially linear array.
3. The device according to claim 2, wherein:
 - the valve means includes a plurality of valves, each controlling a respective fluid path, each fluid path in fluid communication with at least one of said orifices; and
 - the sensing means includes a plurality of sensors arranged in a second substantially linear array that is parallel to the first linear array and positioned adjacent the envelope feed path upstream relative to the first linear array, the sensors being

operative to control said valves, the plurality of sensors being like in number to the plurality of valves.

4. The device according to claim 3, wherein the plurality of valves includes at least six valves and the plurality of sensors includes at least six sensors.

5. The device according to claim 3, wherein each fluid path is in fluid communication with a respective pair of said orifices.

6. The device according to claim 1, wherein said plate is substantially horizontal, and said moistening fluid is discharged in a downward direction.

7. The device according to claim 1, wherein an angle formed by said envelope flap and said body of said envelope to allow said plate to pass between said envelope flap and said body of said envelope is approximately 30° or less.

8. A device for moistening an envelope flap, comprising:

means defining an envelope flap feed path;

means for moving said envelope flap along said feed path with the flap in a substantially horizontal orientation; and

spray moistening means disposed adjacent said envelope flap feed path for spraying moisture in a substantially vertical direction in strip segments to a gummed surface of said envelope flap as said envelope flap moves past the moistening means, said moistening means applying moisture to said envelope flap in tiered segmented strips so as to substantially cover most of the gummed surface of said envelope flap with moisture.

9. The device according to claim 8, wherein the substantially vertical direction is a substantially downward direction.

10. The device according to claim 8, wherein the spray moistening means includes:

a first horizontal plate having a plurality of orifices formed therethrough and a plurality of first fluid channels formed along the first plate and each in fluid

communication with at least a respective one of said orifices, said orifices for discharging the moisture to the envelope flap;

a second horizontal plate mounted on said first plate and having a plurality of second fluid channels formed along the second plate and each in fluid communication with at least a respective one of said orifices; and

a circuit board mounted on said second plate.

11. The device according to claim 10, wherein the orifices are arranged in a substantially linear array.

12. A method of moistening an envelope flap comprising:

transporting an envelope along an envelope feed path to move said envelope past a plate disposed adjacent said envelope feed path, said plate being positioned such that said plate passes between said envelope flap and a body of said envelope;

sensing an edge of the flap; and

selectively actuating valves from among a plurality of valves to spray a moistening fluid from a plurality of orifices located in said plate onto said envelope flap as said envelope is transported along said envelope feed path.

13. The method of claim 12, further comprising:

selectively sending signals to at least some of the valves in response to sensing the edge of the flap.

14. The method of claim 12, wherein said plate is substantially horizontal, and transporting an envelope further comprises:

transporting said envelope past said plate with a least a portion of said envelope flap being substantially horizontally oriented.

15. The method of claim 12, wherein an angle formed by said envelope flap and said body of said envelope to allow said plate to pass between said envelope flap and said body of said envelope is approximately 30° or less.

16. An envelope flap moistening assembly, comprising:
 - a first horizontal plate having a plurality of orifices formed therethrough;
 - a second horizontal plate mounted on the first horizontal plate;
 - a horizontal circuit board mounted on the second horizontal plate;
 - a plurality of sensors mounted on an underside of said circuit board; and
 - a plurality of valves, each mounted on said circuit board or mounted on said first horizontal plate.
17. The envelope flap moistening assembly according to claim 16, further comprising circuit means on the circuit board operatively connected to the sensors and to the valves for selectively actuating the valves in response to the sensors sensing an edge of an envelope flap.
18. The envelope flap moistening assembly according to claim 16, wherein:
 - the orifices are arranged in a first substantially linear array; and
 - the sensors are arranged in a second substantially linear array, the second array parallel to and horizontally offset from the first array.
19. The envelope flap moistening assembly according to claim 18, wherein the second array is vertically offset from the first array.
20. The envelope flap moistening assembly according to claim 16, wherein the plurality of valves includes at least six valves.
21. The envelope flap moistening assembly according to claim 16, wherein at least one of the first and second plates has a plurality of fluid channels formed therealong, each of the fluid channels controlled by a respective one of the valves and in fluid communication with at least a respective one of the orifices.
22. The envelope flap moistening assembly according to claim 21, wherein both of the first and second plates have a respective plurality of the fluid channels formed therealong.

23. The envelope flap moistening assembly according to claim 22, wherein the first and second plates and the circuit board are sandwiched together, with a top surface of the first plate in contact with a bottom surface of the second plate, and a top surface of the second plate in contact with a bottom surface of the circuit board.
24. The envelope flap moistening assembly according to claim 16, wherein some of the valves are mounted on the circuit board and some of the valves are mounted on the first horizontal plate.
25. A mailing machine comprising:
 - an envelope feed path;
 - a moistening device disposed along said feed path, said moistening device comprising:
 - a plate positioned such that said plate passes between an envelope flap and a body of an envelope as said envelope is transported along said envelope feed path, said envelope flap facing a first side of the plate;
 - a reservoir containing an envelope flap moistening fluid;
 - a plurality of orifices formed in said first side of said plate for discharging moistening fluid received from said reservoir;
 - at least one valve connected between said reservoir and said orifices for selectively supplying each of the orifices with moistening fluid from said reservoir; and
 - a flap sensing circuit disposed adjacent said envelope feed path to sense an edge portion of said envelope flap, and operatively connected to said at least one valve for supplying signals to said at least one valve for selectively actuating said at least one valve to selectively supply moistening fluid to said orifices in response to the sensing of the edge portion of said envelope flap.

26. The mailing machine according to claim 25, wherein said plate is substantially horizontal, and said moistening fluid is discharged in a downward direction.
27. The mailing machine according to claim 25, wherein an angle formed by said envelope flap and said body of said envelope to allow said plate to pass between said envelope flap and said body of said envelope is approximately 30° or less.